

Case 3428***Palaemon rosenbergii* De Man, 1879 (currently *Macrobrachium rosenbergii*; Crustacea, Decapoda): proposed conservation of usage by designation of a neotype**

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Abstract. The purpose of this application, under Article 75.6 of the Code, is to conserve the usage of the specific name of *Macrobrachium rosenbergii* (De Man, 1879) for a commercially important giant freshwater prawn from Southeast Asia by designating a neotype. Recent taxonomic reappraisals show that the two subspecies of this prawn, *Macrobrachium rosenbergii rosenbergii* (De Man, 1879) and *M. rosenbergii dacqueti* (Sunier, 1925) are in fact distinct species. The usage of the name *M. rosenbergii* for the species of prawn that is predominantly fished, cultured and studied by biologists is threatened, as its recently designated lectotype is *M. dacqueti*, while the holotype of *M. rosenbergii* is a different species, which has generated much less commercial and scientific interest. As substantial confusion will result if the names are changed, it is proposed that the existing holotype of *Macrobrachium rosenbergii* (De Man, 1879) be set aside and the lectotype of *M. dacqueti* (Sunier, 1925) be designated as neotype of *Macrobrachium rosenbergii* in its place. This action will allow biologists to retain the name *M. rosenbergii* for the commercially valuable species and will result in the less frequently used name *M. dacqueti* becoming a junior objective synonym of *M. rosenbergii*. For the species defined by the current holotype of *M. rosenbergii*, a new name *Macrobrachium wallacei* is proposed and a holotype is designated.

Keywords. Nomenclature; taxonomy; Crustacea; Decapoda; PALAEMONIDAE; *Macrobrachium*; *Macrobrachium dacqueti*; *Macrobrachium rosenbergii*; *Macrobrachium wallacei*; giant freshwater prawn; Southeast Asia.

1. The purpose of this application is to set aside the holotype of *Palaemon rosenbergii* De Man, 1879 (currently *Macrobrachium rosenbergii*), a commercially important giant freshwater prawn, and to designate a neotype for this species. This action is necessary to conserve the usage of the name *Macrobrachium rosenbergii* (De Man, 1879, p. 167) for the freshwater prawn from South and Southeast Asia that has

been the subject of hundreds of technical papers over the years. Failure to conserve this name will cause substantial confusion among fisheries and aquaculture biologists. The species universally known as *M. rosenbergii* (De Man, 1879) is widely fished in South and Southeast Asia, and extensively cultured in Asia, America and Africa. However, the correct name for this species is *Macrobrachium dacqueti* (Sunier, 1925). The holotype of *M. rosenbergii* is from New Guinea and represents a less important species whose range is restricted to the east of Huxley's Line.

2. Rumphius (1705, pl. 1, fig. B), in his '*D'Amboinsche Rariteitkamer*', was the first to record the presence of a giant freshwater prawn in Southeast Asia. The figure in his book, however, was actually not provided by Rumphius himself, but was later added to his manuscript by the editor of the book (Holthuis, 1959, 2000; Beekman, 1999). Fabricius (1793, p. 479) identified the species in Rumphius (1705) as *Astacus carcinus* (Linnaeus, 1758) but later (Fabricius, 1798, p. 402) assigned the species to *Palaemon* Weber, 1795. De Man (1879) described *Palaemon rosenbergii* from Andai, New Guinea (today Papua, Indonesia) on the basis of a single large, ovigerous female. This holotype female, measuring 68.0 mm in carapace length, is still extant (Nationaal Natuurhistorisch Museum, Leiden, RMNH D 1097). Ortmann (1891) and De Man (1892), however, regarded *P. rosenbergii* as only a variety of *P. carcinus*. Cowles (1914) argued that two distinct forms appeared to be present on the basis of Philippine and Indian material, but continued to use the name *P. carcinus* for both. Sunier (1925, p. 117) challenged this identification and showed that *Cancer carcinus* Linnaeus, 1758 (cited by him as *Palaemon carcinus*) was a wholly American species. He proposed a new name, *Palaemon dacqueti* Sunier, 1925 for the Indo-West Pacific species with his own specimens from Java as syntypes. Holthuis (1950), in his revision of the genus *Macrobrachium*, agreed with Sunier (1925) but commented that the name *Palaemon rosenbergii* De Man, 1879 should be used as it was senior to *P. dacqueti* Sunier, 1925. *Palaemon spinipes* Schenkel, 1902 (p. 501), described from Kema in northern Sulawesi, has also been regarded as a junior synonym of *P. rosenbergii* (see Holthuis, 1950, 2000; Wowor & Ng, 2007). Almost all workers since Holthuis (1950) have accepted that there was only one species of commercially exploited giant freshwater prawn in the Indo-West Pacific and its name was *Palaemon rosenbergii* De Man, 1879 (currently *Macrobrachium rosenbergii*) (see Holthuis, 2000; Holthuis & Ng, in press, for a more detailed history).

3. Johnson (1960, 1973) recognised two subspecies of *M. rosenbergii*. The western subspecies, which occurred on the Asian mainland and in Malaysia (Peninsular as well as Sarawak and Sabah in Borneo), he named *M. rosenbergii schenkeli* (see Johnson, 1973, p. 277) based on one male (NHM 1889.6.17.139, type locality Tavoy, Burma) and the eastern subspecies *M. rosenbergii rosenbergii* (De Man, 1879). This conclusion was supported by morphometric and allozyme studies (Hedgecock et al., 1979; Lindenfelser, 1984) and the findings have been further corroborated by recent studies of mitochondrial DNA and microsatellites (de Bruyn et al., 2004; Chand et al., 2005). Holthuis (1995), however, noted that, if two subspecies were to be recognised, the correct name for the western subspecies would be *M. rosenbergii dacqueti* (Sunier, 1925) and the correct name of the eastern subspecies would be *M. rosenbergii rosenbergii* (De Man, 1879).

4. Wowor & Ng (2001) were the first to suggest, on the basis of their own morphological and morphometric studies, that the two subspecies should be

recognised as distinct species, i.e. *M. rosenbergii* (De Man, 1879) and *M. dacqueti* (Sunier, 1925). However, this work was published only as a meeting abstract, and while it has been cited (e.g. Cai & Ng, 2001; Wowor & Choy, 2001; Cai & Ng, 2002; Bruyn et al., 2004; Cai et al., 2004; Wowor et al., 2004; Chand et al., 2005), it has few details and is not a published work under the Code (Article 9.9). All the above authors, however, have kept the status quo in recognising the two taxa only as subspecies. The complete paper with full details on the taxonomy of these prawns was only recently presented (Wowor & Ng, 2007), with morphological and morphometric datasets, colours in life of young and adult, and differences in culture requirements, showing that the two taxa are, in fact, distinct species. *Macrobrachium rosenbergii* (De Man, 1879) as defined by the current holotype occurs in Australia, Papua New Guinea, eastern Indonesia (east of Huxley's Line – including Bali, Moluccas, West Papua and Papua New Guinea) and the Philippines (including Palawan), while *M. dacqueti* (Sunier, 1925) occurs throughout the rest of Southeast Asia, in the western part of Indonesia (west of Huxley's Line including all of Borneo, Java and Sumatra), Malaysia and Singapore, Indochina, southern China, Burma, India, Sri Lanka and eastern Pakistan.

5. At present, the giant prawn universally known as *Macrobrachium rosenbergii* (De Man, 1879) is widely fished in South and Southeast Asia, and extensively cultured in Asia, America and Africa. It is one of the most commercially important crustaceans in the world. In the last decade, average *M. rosenbergii* production rose by some 35% in quantity and almost 20% in value. In 1993, the overall production was 17,164 tons, worth US\$116,799,000, and in 2005 it reached 205,033 tons with a net value of US\$896,263,000 (FAO, 2007). Giant freshwater prawn farming is thus a major contributor to global aquaculture, both in terms of quantity and value. Due to its commercial value, there has been extensive research ranging from fisheries, aquaculture, taxonomy, morphology, development, anatomy, physiology, biochemistry and ecology to social behaviour (see Holthuis, 2000; Holthuis & Ng, in press, for reviews). The prawn has also been the subject of numerous PhD, MSc and Honours projects from all over the world (see Karplus et al., 2000). A search of *Web of Science* (<http://scientific.thomson.com/products/wos/>) between just 2000 and 2005 revealed an average of 29 scientific papers published each year, and in 2006 alone there were 69 research articles published about its culture, including studies on nutrition, disease control, physiology and biochemistry. There are also hundreds of other papers on this species not indexed in *Web of Science*, with New & Valenti (in press) listing over 200 technical publications in the last 50 years that use the name '*Macrobrachium rosenbergii*' for this prawn. The academic interest in this species is clearly very substantial.

6. The species that is widely cultured in America, Asia and Africa actually originates from Southeast Asia. Almost all cultured populations found outside the natural range of this species can be traced to brood-stock imported to Hawaii from Malaysia (Karplus et al., 2000). Thailand also supplies parental stock to several Asian countries such as Japan (Gomez Diaz, 1987), the Philippines and Israel (M. Rowena R. Romana-Eguia, South East Asian Fisheries Development Center, the Philippines, and A. Barki, Agricultural Research Organization, Israel, personal communications). Wowor & Ng's (2007) conclusions have created a major problem concerning the scientific name of this commercially important giant freshwater prawn. On the basis of

Wowor & Ng's (2007) datasets, the Southeast Asian prawn should be called *M. dacqueti* (Sunier, 1925), and the name *M. rosenbergii* (De Man, 1879) should be restricted to a species, defined by the holotype of *M. rosenbergii* from New Guinea, which is not primarily involved in the aquaculture industry and on which much less research work has been done. This situation is clearly unsatisfactory, does not serve the cause of nomenclatural stability and goes against the principle of common usage. Wowor & Ng (2007, p. 331) stated that it would be advisable for the International Commission on Zoological Nomenclature, through the use of its plenary power, to set aside the holotype of *Palaemon rosenbergii* De Man, 1879 and replace it with a neotype from Southeast Asia representing the commercially important western species. They suggested using the lectotype of *Palaemon dacqueti* Sunier, 1925 from Java as the neotype of *Palaemon rosenbergii* De Man, 1879. The neotype so designated will be the male specimen measuring 74.1 mm in carapace length, collected from Batavia [Jakarta], Java, Indonesia, by P. Bleeker between 1842–1860, deposited in the Nationaal Natuurhistorisch Museum, Leiden, The Netherlands, under the catalogue number RMNH D 1065. As this specimen is also the lectotype of *Palaemon dacqueti* Sunier, 1925 (as designated by Wowor & Ng, 2007, p. 327), both names become objective synonyms. As a result of this action, the name *Macrobrachium rosenbergii* will be conserved for the commercially important species. This action also means that the species from New Guinea, Australia and Philippines, previously known as *M. rosenbergii*, will need a new name. The only synonym, *Palaemon spinipes* Schenkel, 1902, is a junior homonym of *Palaemon spinipes* Desmarest, 1817 (p. 513), and, as such, is unavailable. A new name, *Macrobrachium wallacei* sp. nov., is here proposed for the species identified as *Macrobrachium rosenbergii* in Wowor & Ng (2007). A male measuring 79 mm in carapace length, collected from the Laloki River ca. 30 miles from Port Moresby, Papua New Guinea, by M. Rapson, 1972, and deposited in the Nationaal Natuurhistorisch Museum, Leiden, The Netherlands, under the catalogue number RMNH D 28730, is designated here as the holotype of *Macrobrachium wallacei*. The species is named after Alfred Wallace, the famed 19th century English naturalist and discoverer of 'Wallace's Line'.

7. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary power to set aside all previous type fixations for the nominal species *Palaemon rosenbergii* De Man, 1879 and to designate specimen no. RMNH D 1065 at the Nationaal Natuurhistorisch Museum, Leiden, The Netherlands (lectotype of *Palaemon dacqueti* Sunier, 1925) as the neotype.
- (2) to place on the Official List of Specific Names in Zoology the name *rosenbergii* De Man, 1879, as published in the binomen *Palaemon rosenbergii* and as defined by the neotype designated in (1) above.

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